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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,267	07/23/2003	Michael C. Breslin	28810/04002	8405

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CLEVELAND, OH 44114

EXAMINER

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/625,267

Applicant(s)

BRESLIN ET AL.

Examiner

Jason L. Savage

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-8,10,11,14-22,38-41 and 43-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-8,10,11,14-22,38-41 and 43-46 is/are allowed.
- 6) ☒ Claim(s) 47 and 48 is/are rejected.
- 7) ☒ Claim(s) 49 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 47-48 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fox et al (US 6,296,045).

Fox teaches a ceramic/metal composite which is formed by infiltrating a metal into a porous body comprising inert ceramic material and reactive ceramic material (col. 6, ln. 13-16). Fox further teaches that infiltrating metal is aluminum, the reactive ceramic is boron carbide and the inert ceramic may be silicon carbide (col. 6, ln. 17-23). Fox also teaches that after infiltration the ceramic-metal composite can be heat treated for a sufficient time to allow the reactions between the materials to occur (col. 6, ln. 46-58). Although Fox does not explicitly recite the composite material is fully reacted, the teaching that the treatment is done for a time sufficient for the reactions to occur is taken as a teaching the composite is fully reacted. Regarding the limitation that an alumina-aluminum binding phase is contained in the composite, it is the position of the Examiner that at least some alumina reaction product would have been formed during the infiltration and subsequent heat treatment of the composite due to natural oxidation of the ceramic material surface. The alumina and aluminum in the composite

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of Fox thus formed would meet the limitation of being an alumina-aluminum binding phase such as is claimed.

In the alternative, Fox teaches that the inert ceramic may include silicon carbide or aluminum oxide or mixtures thereof (col. 3, ln. 23-27). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included both silicon carbide and aluminum oxide as the inert ceramic material since it is specifically recited as being a suitable combination. Such a composite would meet the limitation being a composite comprising silicon carbide, boron carbide having an alumina and aluminum binding phase after the reaction between the materials is performed.

Regarding claim 48, Fox is silent to the amount of boron carbide however it teaches the inert ceramic is at least about 50% by volume of the composite (col. 4, ln. 1-7). Fox further teaches that the amount of metal in the composite is preferably between 3 to 15% by volume (col. 2, ln. 45-52). As such, one would expect the amount of boron carbide to be within the range of 45 volume percent or less given the preferred ranges for the inert ceramic such as silicon carbide and metal materials in the composite. In the alternative, it would have been obvious.

***Allowable Subject Matter***

Claim 2-8, 10-11, 14-22, 38-41 and 43-46 are allowed.

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Claim 49 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jason Savage  
8-2-06

  
JENNIFER C. MCNEIL  
SUPERVISORY PATENT EXAMINER  
8/2/06